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ABSTRACT

The Personal Profile System (PPS) is a psychological testing instrument that has been widely used. The construct validity of the PPS was studied through a review of the literature. This paper organizes the literature review into three broad categories: the background of the PPS; the reliability of the PPS; and the validity of the PPS. The PPS is a self-scoring instrument measuring the behavioral responses of people along four dimensions: (1) dominance; (2) influencing; (3) steadiness; and (4) compliance. The instrument is designed to provide a systematic and comprehensive perception of an individual's behavioral tendencies and the behavioral tendencies of those with whom the individual comes in contact. Claiming construct validity for an instrument implies evidence that the instrument measures the construct or trait. This review of empirical literature on the PPS found little data concerning its reliability. Several studies offer support of its criterion-related validity. Studies on construct validity were reviewed but provide inconsistent results. None were based on factor analysis which could provide credibility for the instrument. Principal components analysis, followed by orthogonal and oblique rotation, is recommended to affirm the number of common dimensions of the PPS. Four tables, 1 figure, and a 37-item list of references are provided. (SLD)

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Theoretical Considerations for Extracting Meaning from Personal Profile

System Data: The Need for Independent Construct Validity Studies

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Running Head: Personal Profile System: Need for Validity Studies

Theoretical Considerations for Extracting Meaning from Personal Profile
System Data: The Need for Independent Construct Validity Studies

Psychological testing instruments are designed to measure emotional, motivational, behavioral, interpersonal, and attitudinal predispositions and differences among individuals, and to measure reactions of the same individuals on different occasions (Anastasi, 1976). Although the use of these instruments has developed only in the past few decades, they have touched almost every area of our society. Literally hundreds of psychological tests are on the market today and research continues concerning their applications in a variety of institutional environments including schools, colleges, governmental agencies, businesses, and industries (Standards for Educational, 1985). Such instruments are also used extensively in the area of management and leadership training in order to allow employees to develop a better insight into their own job-related behavioral tendencies and the behavioral tendencies of others such as subordinates, peers, customers, and supervisors.

The United States Armed Forces also use psychological instruments for a multitude of reasons, including classification and career field placement (Military Guide, 1984). In each of these environments, the most popular instruments are the types that are essentially paper-and-pencil, self-report questionnaires suitable for group administration (Anastasi, 1976).

"The study of human behavior is a search for answers to perplexing questions about human nature" (Hersey and Blanchard, 1988, p.18). Understanding, predicting, directing, changing, and controlling human behavior are difficult but much sought after skills in a variety of environments; particularly political, religious, health, industry, and governmental

environments. In order for people to label and understand the foregoing human behavior skills, many educational methodologies have been applied. Among them are use of self-scoring psychological instruments designed to assist people in understanding their personal behavior and the behaviors of those with whom they come in contact on a daily basis. But, dating from their very first applications in educational and organizational settings, psychological instruments have been the target of extensive scrutiny, criticism, and debate (Standards for Educational, 1985).

One instrument somewhat surviving the rigors of criticism is the Personal Profile System (PPS). According to Geier (1979), the PPS is a self-scoring instrument measuring behavioral responses of people along four dimensions: Dominance (D), Influencing (i), Steadiness (S), and Compliance (C). It has been claimed to allow one to obtain a systematic and comprehensive perception of one's behavioral tendencies and the behavioral tendencies of those with whom he/she comes in contact (Geier, 1979).

In developing the PPS instrument, Geier used Marston's (1928) procedure for clustering human behavioral descriptors into four dimensions. According to Geier (1979), "This is consistent with Cattell's belief that one could arrive at a short list of . . . main common traits, then characterize a person according to a trait profile or psychograph" (p. xiv). There have been problems, however, with Marston's clustering of descriptors. For example, Cattell (1946) (who defined Marston's descriptors as traits) stated that the descriptors should reflect actually obtained correlations among themselves. In other words, Marston should have performed a factor analysis for determining

which behavioral descriptors clustered within which construct dimensions (Geier, 1979).

Thus, the construct validity of Marston's theoretical model of human behavior, by factor analytic standards, is in question. This becomes particularly important when one considers that claiming construct validity for an instrument implies existence of evidence that the instrument, in fact, measures the construct or trait for which the instrument is said to have validity (Anastasi, 1976, p.151).

One statistical method used to establish construct validity is the statistical analysis technique of factor analysis. "Essentially, factor analysis is a refined technique for detecting common, underlying dimensions on which variables or objects may be located" (Gorman & Primavera, 1983, p. 165). Geier (1979) implied that factor analysis supports the Personal Profile System, but no technical reports of a factor analysis were uncovered in an exhaustive review of the literature.

Measurement Properties of the Personal Profile System

"Determining the dimensionality of an instrument is an [obviously] important component in the construct validation process" (Graham, Halpin, Harris & Benson, 1985, p. 203). The widespread use of the Personal Profile System should have engendered supporting factor analytic studies to establish its construct validity. However, none could be found in existing literature, and several attempts to contact Geier concerning the subject proved unsuccessful.

An attempt was also made to determine if Performax, the parent company of PPS, had information concerning possible past factor analyses of the instrument. The Performax Research Department stated they had no PPS factor analytic results on file but referred questions to Aamodt of Radford University, Virginia, who may have completed a PPS factor analysis. A telephone conversation with Aamodt (personal communication, March 9, 1989) determined no factor analysis had been performed. Aamodt further indicated this was because the behavioral descriptors of the Personal Profile System's four dimensional factors are presented in a dichotomous format (yet dichotomies yield satisfactory factor analyses of achievement tests in education and for other instruments). Consequently, it was not possible to verify from the literature that there are exactly four behavioral dimensions or that the purported four PPS behavioral dimensions are structured according to behavioral-descriptor-counting algorithms defined by its authors.

Measurement Applications of the Personal Profile System

The PPS instrument has been used as an essential tool in identifying and understanding human behavioral styles (New Dimensions, 1984). However, without supporting factor analyses its essential properties and dimensions are unknown, particularly the essential properties of its hypothesized empirical constructs.

Organizational use of a psychological diagnostic instrument in dealing with human behavior can have a potentially adverse affect on the measurement objectives of the organization unless supporting evidence indicates the instrument has both validity and reliability. Thus, the algorithm for scaling

descriptors used with the Personal Profile System to define four constructs (dimensions) of human behavior should be based on a demonstrated correspondence between the choice of dimensional descriptor labels and the empirical dimensions of the instrument.

Since its publication in 1977, the PPS has been used to measure an unknown number (according to New Dimensions, "millions") of people (New Dimensions, 1984). Numerous organizations--including those in the private sector, public service organizations such as fire and police departments, and the United States Armed Forces--have used the PPS instrument for hiring, placing, developing leadership skills, promoting, and/or building work teams. Moreover, the instrument has enjoyed widespread use in educational communities based on Geier's claim of its being a "complete educational measuring system--self-developed, and completely self-interpreted to give individuals a good insight into their own behavioral strengths and weaknesses" (Geier, 1979, p. vii). Consequently, widespread use of the PPS instrument with an assumption of validity in identifying behavioral measures makes definition of its construct validity an important research goal.

Many organizations, including the United States Air Force, have invested large amounts of money and energy in implementation and usage of the Personal Profile System (USAF SNCOA, 1987). On this basis alone, one could justify an objective study to evaluate the Personal Profile System's construct validity.

Literature Review and

Related Research

This review of the literature and related research is organized into three broad categories. First, the background for the Personal Profile System

is introduced. Second, the reliability of the PPS instrument is discussed. Third, notes on the instrument's validity are presented.

Background

Among the hundreds of psychological instruments on the market today, one that has gained popularity is the Personal Profile System (1986). As stated earlier in this report, the PPS is claimed to measure behavioral responses of people along four dimensions: Dominance, Influencing, Steadiness, and Compliance. People possessing these dimensions were described in the PPS Manual (1986, p. 203) approximately as follows: (a) People with Dominance tendencies tend to have their objectives for changing courses of action firmly in the mind and generate messages designed to stimulate and prod others. (b) People with Influencing tendencies actively seek to shape and mold events with stimulating and prodding messages considerate of personal needs of others. (c) People with Steadiness tendencies tend to be product oriented sending messages preserving stability and easy transition to new situations. (d) People with Compliance tendencies seek reasons for change and want accuracy in the change process with assurance of correct execution. (PPS Manual, 1986, p.203).

Moreover, the authors of the PPS presented the four dimensions of behavior as more than a typology system. Their statements tended to suggest situational dependence in human reaction. One illustrative citation follows: "Whatever the person's biological diversities, they [sic] will, if capable of learning, take on the attributes the situations call for" (Geier, 1979, p. ix).

Sequentially, Geier (1979) developed the PPS instrument by extending (or reinterpreting) Marston's (1928) theory of two behavioral dimensions

consisting of four basic behaviors people were capable of displaying: The active behaviors--Dominance (D) and Inducement (i), and the passive behaviors--Submission (S) and Compliance (C). Geier interpreted Marston's theory as being consistent with what Jean Piaget called active component assimilation, meaning the environment is made to provide the satisfaction one wants. The passive component was labeled accommodation, implying one learns to live with whatever the environment has to offer (Flavell, 1966). It should be noted that Geier in the development of the PPS used the term Steadiness in place of Marston's term Submission and Influencing instead of Inducement. No explanation for these changes could be found in the literature. Geier (1979) also used Marston's procedure for clustering descriptors for each of the four dimensions. Table 1 displays a representative listing of the traits Geier claimed had been correlated at least .60 with the classifications to which they had been assigned.

According to Geier (1979), Marston's contribution was formulation of an understanding of human behavior in a way applicable to work-environment and personal situations. Geier was later able to use Marston's four dimensional constructs to develop a psychological testing instrument premised on research findings. Geier continued research on the instrument and by 1977 had developed it into what he claimed was "a complete educational system: self-administered, self-developed, and completely self-interpreted" (Geier, 1979, p. vi). Geier renamed the instrument as the PPS and again revised it in 1979.

The current PPS instrument (1986) contains (a) a measurement device generating scores for each dimension, (b) graphs for plotting obtained scores, (c) directions for interpreting scores, and (d) interpretational formats. It

Table 1

Personal Profile System Four Dimensions of Human Behavior
and Associated Descriptors

DOMINANCE	INDUCEMENT	SUBMISSION	COMPLIANCE
adventurous	admirable	accommodating	accurate
aggressive	affectionate	attentive	adaptable
argumentative	animated	cheerful	adherent
arrogant	attractive	companionable	agreeable
assertive	boastful	confidential	calculating
bold	charming	considerate	calm
brave	companionable	contented	cautious
competitive	confident	controlled	conformist
daring	convincing	deliberate	consistent
decisive	cordial	earnest	contemplative
defiant	energetic	easy mark	cultured
determined	expressive	even-tempered	devout
direct	fervent	friendly	diplomatic
eager	flexible	generous	easily-led
fearless	fluent	gentle	exacting
firm	good mixer	good-natured	fearful
force of character	high-spirited	gracious	fussy
forceful	inspiring	hospitable	God-fearing
inquisitive	jovial	kind	harmonious
inventive	joyful	lenient	humble
irritable	life-of-party	loyal	logical
nervy	light-hearted	mild	objective
original	open-minded	moderate	obliging
outspoken	optimistic	modest	peaceful
persistent	persuasive	neighborly	precise
pioneering	playful	nonchalant	receptive
positive	polished	obedient	resigned
rebellious	popular	patient	respectful
restless	prideful	peaceful	soft-spoken
rigorous	proud	possessive	strict
self-reliant	responsive	reliant	systematic
stubborn	self-assured	sentimental	tactful
unconquerable	spirited	sympathetic	timid
vigorous	talkative	trustful	tolerant
willpower	trusting	willing	well-disciplined

Note. Source: PPS Manual (1986, p. 5).

requires respondents to select from 24 panels made up of two columns, one labeled MOST and the other labeled LEAST. Each column in a panel has four descriptors. Respondents first select the descriptor most like themselves for recording under the MOST column then another least like themselves for the LEAST column. Figure 1 shows an example of one of the PPS instrument panels and accompanying descriptors (PPS Manual, 1986).

This individual tends to be MOST original and LEAST gentle.		L
	M	E
	O	A
	S	S
	T	T
gentle		X
persuasive		
humble		
original	X	

Note. Source: PPS Manual (1986, p. 5)

Figure 1. Personal Profile System Forced Choice Panel

After all the selections are made, respondents, for the MOST and LEAST columns, separately count in turn all descriptors from the 24 panels representing D (Dominance), i (Influencing), S (Steadiness), and C (Compliance). The scores are plotted on three different graphs representing

three different interpretations. These graphs are named as follows: (a) "Graph I behavior: expected by others"; (b) "Graph II behavior: instructive response to pressure"; and (c) "Graph III behavior: self-perception" (PPS Manual, 1986).

Based on these results, a behavioral pattern should emerge for each of the three graphs. The patterns may be all the same, two of three the same, or all three may be different. Thus, a respondent will have 1 to 3 out of 18 possible behavior patterns, 15 of which have been collected in the Library of Classical Patterns (Geier & Downey, 1982) describing inclinations of subjects with regard to (a) emotions; (b) goals; (c) method of judging others; (d) method of influencing others; (e) value to an organization; (f) overuse of behaviors, manner, and attitude; (g) conduct to be expected under pressure; (h) fear; and (i) means whereby one might increase personal effectiveness. Geier (1979) reported that individuals using this instrument as a method of selection were able "to report on themselves and others [and presumably to categorize and describe their respective behavioral characteristics] with a high degree of accuracy" (p.vi).

The Personal Profile System not only became an economic success, but Performax Inc., the parent company, also developed over a dozen learning instruments intrinsically related to the PPS (New Dimensions, 1984). Examples include, among others, the following: (a) The Job Factor Analysis System, (b) The Action Projection System, (c) The Listening Climate Indicator (d) The Climate Impact Profile System, (e) The Values Analysis Profile, (f) The Child's Profile, (g) The Performance Pathfinder, (h) The Persona Matrix, and (i) The Activity Perception System. All of these human resource development

instruments have supplemented the economic success of the Personal Profile System (New Dimensions, 1984). Based on these examples it would have seemed both logical and essential to establish the reliability and validity of the PPS instrument thereby providing the basic foundation for each of the subsequently-developed, above-mentioned instruments.

Reliability

"Typically, test [instrument] developers and publishers have primary responsibility for obtaining and reporting evidence concerning reliability and errors of measurement adequate for the intended uses" (Standards for Educational, 1985 p. 19). Reliability addresses "the extent to which a measurement consistently represents an intended characteristic" (Lutz, 1983, p. 12). These citations basically carry the same meaning: the same, or nearly the same, score should be obtained with an alternative form of the test or the same test at a different time or under different conditions or situations (Lyman, 1986).

The classic Kuder-Richardson studies extended, with the KR-20 and KR-21, the concept of consistency to reflect relationships among items. Others have contributed to the classic among-items consistency concept, particularly Hoyt (1941) and Winer (1977). Winer (1977), furthermore, presents reliability as a generalized concept applicable to measurements and not restricted to achievement test results only. Winer also offers an interpretation for reliability as a measure of group-wise consistency for among items' profiles of individuals having similar scores. It is this latter interpretation of reliability that serves as the best criterion for the present report.

Performax, in the Personal Profile System Manual (1986), presented a reliability discussion of the PPS instrument. That discussion consisted of statements such as "Our research shows good reliability--obtaining the same results upon retaking the instrument--if the circumstances are approximately the same" (p. 8). Performax further stated the following:

. . . it is difficult to reproduce the exact situation under which a person responded to the PPS instrument the first time. Personal factors, such as mind-set, mood, health, fatigue, etc., have some influence, but the most important factor is that the respondent now knows what the instrument is measuring. . . . [Each respondent knows] what DiSC is and that could bias the word choice. However, if a period of time is allowed for forgetting, the reliability is good (PPS Manual, 1986, p. 8-9).

For the effect of the instrument's limited measurement-time constraints on reliability, Performax stated, "We have studied the differences in results when persons take an unlimited time and compared them with results under a time constraint. From the standpoint of reliability, the results are certainly in the same ballpark" (PPS Manual, 1986, p.9). However, neither of the foregoing claims was based on an accompanying report by Performax of coefficients of reliability. Lutz (1983) recommended one should "be a cautious believer in data's reliability and demand . . . [an] explanation before accepting such an assertion" (p.13). "Each method of estimating a reliability that is reported should be defined clearly and expressed in terms of variance components, correlation coefficients, standard errors of measurement, percentages of correct decisions, or equivalent statistics" (Standards for

Educational, 1985, p.20). Moreover, reliability coefficients are to be contrasted with indices of reliability. The two differ in that indices compare with Pearson correlations and coefficients are proportions of variance that compare with coefficients of determination. An index, thus, is the square root of a coefficient.

One report giving reliability indices for the PPS was "Measuring Personality Traits at the United States Air Force Academy Using the Personal Profile System" (Rosebush & Antons, 1985). On July 11, 1984, one-hundred ten basic cadets from three different squadrons were administered the PPS. On August 10, 1984, the same group was administered the PPS again en masse with identical instructions. A Spearman Correlation Coefficient was used to compare the PPS ordinal data. For each graph (Graph I, II, III) and each behavioral dimension (D,i,S,C), the basic cadets' July 11th responses were compared with their August 10th responses (Rosebush & Antons, 1985). The correlation coefficients for each measured area are shown in Table 2. A correlation coefficient below .5 is considered very low; .5 to .7 is considered moderate; .7 to .86 is considered high; and above .86 is considered very high (Fox, 1969). The proportion of variance column was added to Rosebush & Antons' (1985, p. 14.) findings cited in Table 2.

Validity

Another important characteristic of psychological instruments measuring personality or behavioral style is validity (Aamodt, 1985). A valid test is one measuring what it was designed to measure and not other extraneous variables (Brown, 1983). The three types of validity associated with psychological evaluation instruments are grouped into categories called

Table 2

Personal Profile System ReliabilityCorrelation Coefficients

Trait Measured	Correlation Coefficient	Proportion of Variance
Graph 1:		
"D" trait	.7690	.5913
"i" trait	.6886	.4741
"S" trait	.7454	.5556
"C" trait	.6881	.4734
Graph 2:		
"D" trait	.6539	.4275
"i" trait	.6745	.4549
"S" trait	.5984	.3580
"C" trait	.6184	.3824
Graph 3:		
"D" trait	.7332	.5375
"i" trait	.7342	.5390
"S" trait	.7310	.5343
"C" trait	.6446	.0415

Note. Source: Rosebush & Antons (1985)

content-related, criterion-related, and construct-related (Standards for Educational, 1985). Content-related validity "demonstrates the degree to which the sample of items, tasks, or questions on a test are representative of some defined universe or domain of content" (Standards for Educational, 1985, p. 10). Criterion-related validity, on the other hand, is concerned with how well "test scores are systematically related to one or more outcome criteria" (Standards for Educational, 1985, p. 11).

Of the different types of validity, the one of particular interest in preparing this report was construct-related validity. In contrast to the other types of validity, construct-related validity represents "the extent to which

the . . . [instrument] may be said to measure a theoretical construct or trait" (Anastasi, 1976, p. 151). Intelligence, creativity, anxiety (Gronland 1985), self-esteem, and sensitivity (Tuckman, 1988) are examples of constructs, as are personality characteristics such as sociability and introversion (Standards for Educational, 1985). Content validity and predictive (sometimes called criterion-related) validity add some supporting evidence for the measurement of traits, but are by no means all inclusive (Nunnally, 1978).

In regard to validity, Performax cites the following specific studies and also states "that there are a number of ways to establish validity and we have used them all" (PPS Manual, 1986, p. 13-14). In addition, Performax states "that participants using the PPS instrument report that 90 to 95 percent of the interpretation fits them" (PPS Manual, 1986, p. 13). But as with Performax's reliability statements, no coefficients were given.

Face and Content Validity

Aamodt and Kimbrough's (1982) report dealt with Performax's 90 to 95 percent validity claim and involved administering the PPS instrument to 58 subjects. Half of those subjects were given a copy of an interpretation corresponding to a profile selected through a shuffling procedure. The others were given a copy of the interpretation associated with the actual PPS profile. Aamodt and Kimball (1982) reported "students receiving actual profile interpretations rated them as being more accurate ($M = 16.52$, $SD = 2.65$, range = 11 to 20) than did students receiving false interpretations ($M = 14.83$, $SD = 3.65$, range = 2 to 20), $t(56) = 2.08$, $p .05$ " (p. 626). Aamodt and Kimbrough (1982) further suggested the PPS to possess ". . . at least a moderate degree of face validity (does the person . . . [measured] believe the items are

appropriate?)" (p.626). However, as Aamodt and Kimbrough (1982) indicated, face validity does not necessarily indicate content or construct validity. But if PPS respondents believe the instrument appears valid, it may have an important influence on their motivation and therefore on validity (Brown, 1983). Unfortunately, literature concerning content validity studies on the PPS could not be found.

Criterion-Related Validity

On the other hand, several criterion-related studies were found in the literature. The first study reported by the PPS Manual (1986, p. 13) was the Meskin report of 1974 based on the behaviors of 300 Minnesota dentists with different profiles to determine if they exhibited specific profile related behaviors in their work environments. The dentists were grouped according to their profile configurations. Five groups were noted: D, i, S, C and Misc. The Meskin (1974) report did not provide the correlation coefficients or number of dentists in each group. The Meskin (1974) findings at best can be described as measures of concurrent validity or predictive validity: (a) High D and High i dentists reflected D and i behavior in their practice of dentistry. (b) High S and High C dentists preferred to do the work themselves and hired fewer auxiliaries. (c) High D dentists worked more hours than other profile counterparts. (d) High D dentists appeared more satisfied with auxiliaries most like themselves. (e) Disliking details, High D and High i dentists tended to hire more dental auxiliaries than other dentists. One should note that Performax did not report how the dentists exhibited the foregoing behaviors.

Performax stated the Meskin study "added a further note of validity to the Personal Profile System . . .; that is, dentists with various profiles

demonstrated the behavioral tendencies . . . typical of their patterns in the dental office" (PPS Manual, 1986 p 13). However, House (1982) claimed the Meskin article:

Does not describe a validity study, but instead was an article urging dentists to consider compatibility issues in team building. As such, it reported the results of a study that assumed the validity of the PPS. No evidence was provided with regard to the statistical significance of differences among dental profile categories on any of the dependent variables (p. 25).

House also reported the Meskin dental study listed the C scale as a measure of "Compatibility" instead of Marston's construct term "Compliance". Once again, no explanation was given for this change in terminology.

Also found in the literature were six studies conducted at Radford University and the University of Arkansas investigating the criterion-related validity of the PPS (Aamodt, 1985). Aamodt (1985) stated the evidence is "supportive of the overall validity of the PPS" (p. 7).

The following two studies were representative of the six criterion-related validity studies Aamodt presented in Studies in the Validity, (1985). First, Aamodt (1985) theorized that people with Dominance characteristics were expected to receive more parking and traffic tickets than people displaying other behavioral tendencies. He based this on the D's need for independence being so strong they will do whatever they want to do regardless of the rules. As shown in Table 3, individuals displaying the Dominance behavioral trait tended to receive more traffic and parking tickets than individuals having the other three behavioral styles.

Table 3

Behavioral Style and Number of
Traffic Tickets Received

Behavioral Style	Type of Ticket	
	Traffic,	Parking
Dominance	2.63	5.00
Influencing	1.46	3.07
Steadiness	1.51	1.62
Compliance	1.64	2.09

As indicated in Table 4, Aamodt (1985) found that Dominance behavior individuals tended to set higher goals, while Steadiness individuals tended to set lower goals. Influencing individuals set more moderate goals and were more likely to accomplish them.

Table 4

Correlations Between PPS Scores and Goal Setting

PPS scale	Level of goal	Percent of goal obtained
Dominance	.37	-.04
Influencing	-.08	.43
Steadiness	-.43	-.10
Compliance	.03	.07

Construct Validity

A few reports of PPS construct validity were found. One report, in the Personal Profile System Manual (1986), was developed at Notre Dame's Center for Human Development. Personnel at the Center had been using the Personal

Orientation Inventory (POI) and the Tennessee Self-Concept Scale (TSCS) in seminars. If, as theorized, the Personal Profile System contained elements sufficiently representative of the POI and the TSCS, there might be justification to substitute the Personal Profile System which is less expensive and easier to interpret.

To avoid bias, Performax "commissioned . . . Behavioral Research Consultants to do the research" (PPS Manual, 1986, p. 13) based on 100 subjects responding to all three instruments. Relationships among the D, i, S and C scale scores of the PPS and the individual item responses to the POI and the TSCS were studied through point-biserial correlation analysis. Moreover, significantly correlated items from the POI and TSCS were placed in multiple regression models with Personal Profile System subscales as criterion measures (PPS Manual, 1986). Multiple Correlation Coefficients (R's) for PPS Scale Scores and POI items ranged between .49 and .72. R's for PPS Scale Scores and TSCS items ranged between .62 and .82. Without regard to errors based on repeated decisions (the experiment-wise error rate), Performax proposed the dimensionality of the PPS to have been sufficiently represented within the POI and the TSCS to conclude ". . . one may choose among these instruments based on economic and utilitarian considerations" (PPS Manual, 1986, p. 15).

House (1982) stressed that while the Notre Dame coefficients were relatively high they represented very little with clear meaning (p. 24). House supported this observation on the basis of Buros' (1978) description of the POI as being comprised of 150 items and the TSCS of 100 items. From those numbers, House calculated a total of 1,000 correlation coefficients were required for the Notre Dame Study. He further calculated that "if the .05

alpha level was applied as a criterion for each hypothesis of no significant correlation, 50 of the 132 significant correlations (38 percent) could, on an average, have been expected to occur due to chance random error" (House, 1982, p. 24).

The House report (1982) stated that the Notre Dame study used "isolated and conceptually ambiguous items in interpreting the correlation data" (p. 25). House further claimed "some 12 meaningful scaled scores for the POI and 14 meaningful TSCS profile scores as listed in The Seventh Mental Measurements Yearbook (1978) could have been tested instead" (p. 25). Consequently, the Notre Dame study "obscured the theoretical meaning of the POI and TSCS items" (p. 25).

House pointed out an importance of the Notre Dame study was provision of information for decision making. The POI and the TSCS were in use at the University, and because of interpretive and economic considerations, the PPS was being considered as an alternative for both instruments. Thus, the PPS statements concerning validity were not based on a validity study regarding the PPS, but on a study assuming the validity of the PPS (House, 1982, p. 26).

The report by Aamodt (1982) compared the PPS to the Trait Evaluation Index (TEI) to further establish construct validity for the PPS. The 24 scales on the TEI were correlated (using an unreported algorithm) for a sample size of 64 with the 4 scales of the PPS. Results indicated 29 significant correlations. Again, the experiment-wise error was ignored.

Recognizing the impact the PPS and related instruments were making, Performax in 1982 contracted with Kaplan Associates to reexamine the construct validity of the Personal Profile System. Kaplan and Kaplan (1983) investigated

how the PPS correlated as an assessment instrument with other highly researched and valid psychological instruments as reported in The Eighth Yearbook of Mental Measurements (1978). The Kaplan study revolved around the Dominance, Influencing, Steadiness, and Compliance dimensions of the Personal Profile System.

For comparison with the PPS, Kaplan and Kaplan (1983) selected five well-known psychological testing instruments: The Wechsler Adult Intelligence Scale (WAIS), The Type Indicator (MBTI), The Cattell 16 Personality Factor Questionnaire (16PF), The Minnesota Multiphasic Personality Inventory (MMPI), and The Strong-Campbell Interest Inventory (SCII). The Ninth Mental Measurements Yearbook (Mitchell, 1985) reported each to have predictive and/or construct validity. Thus, Kaplan and Kaplan (1983) tried to establish construct validity of the PPS by correlating (a criterion validity approach) the PPS instrument to these five well-established psychological instruments. Fundamental to their investigation was an assumption: if the PPS correlated significantly with other valid measures of personality, the correlations themselves would be evidence that the PPS had construct validity (Kaplan & Kaplan, 1983). That assumption was obviously faulty.

The Kaplan Report (1983) included 103 adults ranging in ages from 17 to 73 years. Statistical analyses were Pearson Product Moment Correlation Coefficients, t-tests, and Analysis of Variance. The results revealed significant numbers of correlations (algorithm unknown) at the .05 level with acknowledgement of experiment-wise error rate. The WAIS was the only non-self-report instrument involved in the study; the other five (to include the PPS) were self-report instruments (Kaplan & Kaplan, 1983, p. 22).

The Personal Profile System was reported to correlate beyond the level of chance expectancy with the 16PF, MBTI, WAIS, SCII, and the MMPI (Kaplan and Kaplan 1983). Moreover, results indicated overlapping of the PPS with personality dynamics, preferences, and types as measured by the 16PF, MBTI, WAIS, SCII, and the PAS (when WAIS is scored by the PAS system).

Significant correlations between a new instrument and similar earlier instruments can mean that approximately the same general area of behavior is being measured (Anastasi, 1976). This may apply to the PPS when correlated with the 16PF, MBTI, SCII, WAIS, and the MMPI. On the other hand, the correlations reported by Kaplan and Kaplan (1983) were not so large that the PPS instrument was a needless duplication of the 16PF, MBTI, WAIS, SCII, and MMPI.

A follow-on to the Kaplan Study (1983) was the Winchester Report (1984). In the Winchester Report, Kaplan and Kaplan compared child and adolescent performance on the PPS with that of Junior/Senior High School Personality Questionnaire (HSPQ) (Cattell, Cattell, & Johns, 1984) and the Myers-Briggs Type Indicator (MBTI) (Myers, 1962). Comparisons between the PPS and these validated criterion tests were reported. Kaplan and Kaplan (1983) had argued earlier that the PPS displayed construct validity. In the Winchester Report, they claimed the findings repeated themselves. Thus, they wrote "The [earlier] Kaplan Report is clearly substantiated" (Kaplan & Kaplan, 1984, p. 27).

Conversely, in "A review of the Personal Profile System" (House, 1982) presented evidence suggesting the Personal Profile System should be "rated near the lower end of any validity scale" (p. 30). House came to this conclusion for several reasons: First, in his view, PPS algorithms treated the 24 panels of MOST and LEAST descriptors as though they were obtained from two

different interval scales. In actuality, he wrote, "the level of measurement is ordinal" (House, 1982, p. 12). Second, the use of distractors among the PPS instrument's 96 descriptors may be criticized because "it is illogical to define a term as a distractor and then count it as evidence for a dimension if it is selected at a given score level" (House, 1982, p.16). Third, PPS instructions request respondents "To complete the Personal Profile, focus[ing] in on how you see yourself functioning with other people" (PPS Manual, 1986, p. 18). The problem is balancing an absence in the instructions for respondents to simulate (a) other people's expectations of them or (b) their behavior under pressure. Nevertheless, in analysis respondents plot their choices on two different graphs including both interpretations. The two graphs are named "Graph I behavior: expected by others," and "Graph II behavior: instructive response to pressure." The third graph consistent with instructions is named "Graph III behavior: self-perception" (PPS Instrument, 1986, p. 5).

House (1982) noted Graph I's name did not correspond with how people see themselves, Graph II's name is not mentioned in the PPS instructions, and only Graph III's self-perception deals with how people see themselves.

House (1982) further stated: "The Personal Profile System seems to lack a firm basis for its proclaimed validity and reliability" (p. 27). He criticized Performax for not publishing more data on the validity and reliability of the instrument. On the other hand, Performax (PPS Manual, 1986) claimed "it is involved peripherally in a number of research studies conducted under the guidance of colleges and universities" (p.13).

Conclusions and Implications

After a comprehensive literature review, the question of validity for the Personal Profile System remains unanswered and confused with conflicting reports. Confusion over validity is critical considering "the most important characteristic of any test [instrument] is validity" (Brown, 1983, p. 19). Even more critical is that self-reporting instruments (such as the PPS) should possess construct validity (Brown, 1983), as a necessary property well documented in the literature (Cronbach, 1970; and Graham & Lilly, 1984). All five psychological instruments that the Kaplan and Kaplan study (1983) utilized (WAIS, MBTI, 16PF, MMPI, and SCII) have undergone construct validity analysis (Keyser & Sweetland, 1987). On only the basis of correlations with established instruments, The Kaplan Report (1983) claimed "much evidence" for construct validity of the PPS.

In more usual practice, determination of construct validity of an instrument grows from an accumulation of research (Graham & Lilly, 1984). It is neither established by one study nor summarized by a single index (Brown, 1983). It involves a number of different types of studies designed to further define the nature of the construct (Brown, 1983). For a given instrument the choice of approaches used to gather evidence for construct validity depends "on the particular validation problem and the extent to which validation is focused on construct meaning" (Standards for Educational, 1985, p. 10).

But, of the validity studies found in the literature, the only ones dealing with construct validity (not based on factor analysis) conflicted with one another. Therefore, a factor analysis of the PPS to provide evidence for its construct validity is long overdue. The results of such a study could

provide useful information for involved individuals concerning the level of confidence one can have in the instrument. Thus, factor analytic results would provide additional-instrument credibility if the behavioral descriptors loaded on the factors as claimed. Conversely, if the dimensionality of PPS would be found to vary from previous claims of its construct validity, then interpretations forthcoming from use of the system could be more harmful to its users than helpful.

An investigation designed to define the dimensionality and other measurement properties of the PPS, at minimum, should include a principal components analysis followed by both orthogonal and oblique rotations. A necessary and achievable goal of each of these analyses should be to affirm the number of common dimensions underlying the PPS.

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